

Welch®

**OEM, Industrial & Refrigeration Catalog
2005-2006**

**Compact Direct-Drive High Vacuum Pumps
Catalog Pages 2, 3 & 8**

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Welch® Vacuum Pumps

Lightweight, Compact, High Performance Pumps

Suited For:

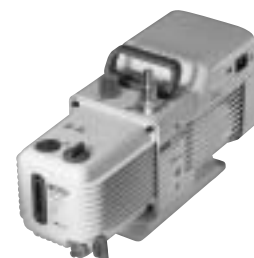
- General Vacuum Work
- Heat Treating
- OEM Instrumentation
- Replacement Pumps for Instruments and Equipment



8890A
(see note 3)



8905A



8907A/8912A/8917A

Specifications

TWO-STAGE VACUUM PUMPS¹

Welch Model	8890	8905	8907	8912	8917	8920
Free Air Displacement						
CFM (L/min) @ 60Hz	1.1(31)	1.8(51)	2.6(73)	3.8(108)	6.1(173)	7.7(218)
m ³ /hr (L/min) @ 50Hz	1.6(26)	2.6(43)	3.7(61)	5.4(90)	8.6(144)	10.9(182)
Ult. Pressure, Torr (mbar) ¹	1 x 10 ⁻¹ (0.133)	2 x 10 ⁻³ (0.0027)	1x10 ⁻⁴ (0.00013)	1x10 ⁻⁴ (0.00013)	1x10 ⁻⁴ (0.00013)	3 x 10 ⁻⁴ (0.0004)
Ult. Pressure, microns Hg	100	2.0	0.1	0.1	0.1	0.3
Sound Level, dBA	58	52	50	50	50	54
Motor/Pump Speed (60Hz)	3450	3450	1725	1725	1725	1725
Motor Horsepower (watts)	1/4(190)	1/4(190)	1/2(370)	1/2(370)	1/2(370)	1/2(370)
Oil Capacity, qt. (liters)	0.48(0.45)	0.42(0.4)	1.0(0.95)	0.9(0.86)	0.9(0.86)	1.3(1.2)
Tubing Needed, I.D. in. (mm)	3/8 (10)	3/16, 7/16 (5, 11)	7/16, 13/16 (11, 20)	7/16, 13/16 (11, 20)	7/16, 13/16 (11, 20)	9/16, 13/16 (14, 20)
Intake Connection ² (thread)	Barb (1/4 in NPT)	UNIBARB (3/4-20)	UNIBARB (1 1/8-20)	UNIBARB (1 1/8-20)	UNIBARB (1 1/8-20)	UNIBARB (1 1/8-20)
Exhaust Connection ³	3/4-20	3/4-20	1-20	1-20	1-20	1-20
Weight, lbs (kg)	24.5(11.1)	24.5(11.1)	40(18)	41(18)	43(19.5)	58.5(26.6)
Overall Dimensions						
L in. (cm)	14.5(36.8)	14.1(35.9)	18.5(47.1)	18.5(47.1)	18.5(47.1)	20.5(52.1)
W in. (cm)	5.1(13)	5.1(13)	6.5(16.5)	6.5(16.5)	6.5(16.5)	7.1(17.9)
H in. (cm)	8.4(21.3)	8.4(21.3)	9.6(24.3)	9.6(24.3)	9.6(24.3)	10.7(27.2)
Ship Weight, lbs (kg)	33(15)	33(15)	55(25)	55(25)	60(27.3)	71(32.3)
Shipping Carton Dimensions L x W x H in. (cm)	21.5 x 12.5 x 16 (54.6 x 31.8 x 40.6)	21.5 x 12.5 x 16 (54.6 x 31.8 x 40.6)	24 x 15.8 x 14 (61 x 40.1 x 35.6)	24 x 15.8 x 14 (61 x 40.1 x 35.6)	24 x 15.8 x 14 (61 x 40.1 x 35.6)	24 x 15.8 x 14 (61 x 40.1 x 35.6)

Ordering Information^{4, 5, 6.}

Catalog Number	8890A ^{7,8.}	8905A	8907A	8912A	8917A	8920A
Wired for 115V, 60Hz, 1 Ph with N. American 115V Plug						
Wired for 230V, 50Hz, 1 Ph with Cont. Euro. (Schuko) Plug	8890C-02 ^{7,8}	8905C-02	8907C-02	8912C-02	8917C-02	8920C-02
Wired for 230V, 60Hz ² with N. American 230V Plug	-----	-----	-----	8912C-01	8917C-01	-----
Wired for 115V, 60Hz, 1 Ph with N. American 115V Plug & ISO NW inlet flange ⁵	-----	8905B-24	8907B-24	8912B-24	8917B-24	8920B-24

Notes:

- Models 8905, 8907, 8912, 8917, 8920, and 8925 should not be operated continuously at pressures above 10 Torr. Ultimate pressure measured with a trapped McCleod gauge.
- UNIBARB™: Convenient inlet barb connection accepts two sets of tubing ID (see page 22).
- Cat. nos. 8890A & 8890C-02 includes an exhaust filter; not included with any other model.
- All single phase motors have overload protection. 115V, 60Hz models are CSA approved.
- NW inlet flange replaces UNIBARB on these Cat. Nos. Cat. No. 8905B-24 comes w/NW 16 inlet flange. Cat. Nos. 8907B-24, 8912B-24, 8917B-24 & 8920B-24 comes w/NW 25.

Accessories and Oil



8920A



8925A

Exhaust Filter

A replaceable filter element captures oil mist from the exhaust port of the pump and reduces pump noise.

Pump Model	Cat. No.
8890, 8905	1417
8907, 8912, 8917	1417P-7
8920, 8925	1417P-10



Exhaust Oil Recycler

Use when pumping continuously above 1 Torr. Captures oil mist from the pump, and returns collected oil to the pump via a gas ballast connection.

Pump Model	Cat. No.
8890 (GEM)	1416B
8905	1416H
8907, 8912, 8917, 8920, 8925	1416C



Dry Ice/Liquid Nitrogen Trap

Recommended to protect pump from condensable vapors. Use either dry ice slurry or LN2 in the 3 quart center well. Accepts 7/16" I.D. hose. See pg. 27.

Pump Model	Cat. No.
8890, 8905, 8907, 8912, 8917, 8920, 8920	1420H-14



Premium Vacuum Pump Oil

Higher viscosity formula that resists breakdown at higher RPM and temperatures of direct drive vacuum pumps.

Size	Cat. No.
Liter	8995P-11
Gallon	8995P-15
5 Gallon	8995P-20
55 Gallon	8995P-25



Gold Vacuum Pump Oil

Specially formulated oil for challenging applications. This highly saturated synthetic oil is resistant to breakdown at higher temperature and is highly stable in chemical environments.

Size	Cat. No.
Liter	8995G-11
Gallon	8995G-15
5 Gallon	8995G-20
55 Gallon	8995G-25



SPECIAL APPLICATION SYSTEMS

8925	GEM® System ⁸	For Harsh Chemicals ⁹
11.3(320)	1.1(31)	6.1(173)
16(267)	1.6(26)	8.6(144)
4 x 10 ⁻⁴ (0.00053)	1x10 ⁻¹ (0.133)	1x10 ⁻² (0.013)
0.4	100	0.1
55	58	50
1725	3450	1725
3/4(560)	1/4(190)	1/2(370)
1.2(1.1)	0.48(0.45)	1.4(1.3)
9/16, 13/16 (14, 20)	3/8 (10)	7/16, 13/16 (11, 20)
UNIBARB (1 1/8-20)	Barb (1/4 in NPT)	UNIBARB (1 1/8-20)
1-20	3/4-20	1-20
69(31.3)	27.5(12.5)	55(25)
21.2(53.8)	14.5(36.8)	18.6(47.2)
7.1(17.9)	5.1(13)	11.5(29.2)
10.7(27.2)	14.3(36.3)	9.6(24.4)
74(33.6)	37(16.8)	70(31.8)
24 x 15.8 x 14 (61 x 40.1 x 35.6)	21.5 x 12.5 x 16 (54.6 x 31.8 x 40.6)	25 x 18.5 x 14 (63.5 x 47 x 35.6)

8925A	8890A-70	8917A-80 ¹⁰
8925C-02	8890C-72	8917C-80
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6. 230V, 50 Hz models which are provided with CE mark.

7. Cat No. 1416B Exhaust Oil Recycler is recommended when operating the GEM at pressures of 1 Torr or higher.

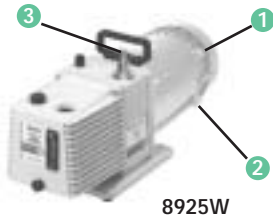
8. GEM System includes 1416B Exhaust Oil Recycler & 1421 Vacuum Regulator.

9. System comes with integral oil filtration system. See page 8 for more details.

10. Order 8917C-80 and cord set 8906M for 230V, 60Hz, 1 Ph.

Special Configuration Direct Drive Pumps

Pump With Explosion Proof Motor

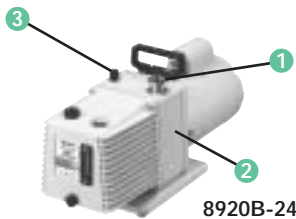


- 1 Explosion proof motor, Class I Group D, Class II Groups E,F,G
- 2 Conduit wiring installation required. No Cord, plug or switch provided
- 3 UNIBARB™ Inlet Connection

Cat. No.	Description ¹
8917W	173L/min, 1x10 ⁻⁴ Torr(1.3 x 10 ⁻⁴ mbar), 115/230V, 60Hz, 1Ph
8925W	320L/min, 4x10 ⁻⁴ Torr(5.3 x 10 ⁻⁴ mbar), 115/230V, 60Hz, 1Ph

Note: See pages 2 & 3 for more details.

Pump With ISO Inlet Flange

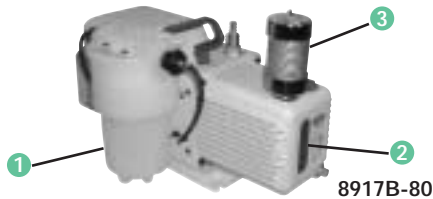


- 1 NW 25 inlet connection
- 2 Isolation & anti-oilsuckback solenoid valve
- 3 Gas ballast

Cat. No.	Description ¹
8905B-24	51L/min, 2x10 ⁻³ Torr(2.7 x 10 ⁻³ mbar), 115/230V, 60Hz, 1 Ph
8917B-24	173L/min, 1x10 ⁻⁴ Torr(1.3 x 10 ⁻⁴ mbar), 115/230V, 60Hz, 1 Ph
8920B-24	218L/min, 3x10 ⁻⁴ Torr(4 x 10 ⁻⁴ mbar), 115/230V, 60Hz, 1 Ph

Note: See pages 2 & 3 for more models and details.

Pump With Integral Oil Filtration System

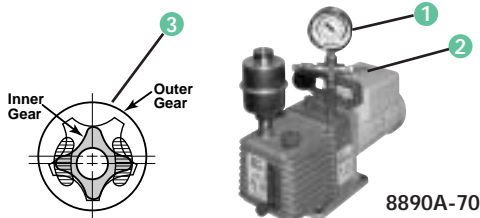


- 1 Continuous neutralization of acids in oil
- 2 Gold oil resistant to chemical attack
- 3 Mist eliminator included

Cat. No.	Description ¹
8917B-80	173L/min, 1x10 ⁻² Torr(1.3 x 10 ⁻² mbar), 115/230V, 60Hz, 1 Ph
8917C-80	Same as 8917A-80 except 143L/min @50Hz, 230V with universal IEC connector and detachable Schuko line cord, CE

Note: See page 3 for more details.

GEM® Pump With Vacuum Regulation



- 1 Vacuum regulation with dial vacuum gauge
- 2 Pump operates from 0.1 Torr to 760 Torr
- 3 Gear pumping mechanism very tolerant of vapors

Cat. No.	Description ¹
8890A-70	31L/min, 0.1Torr(0.13 mbar), 115V, 60Hz, 1 Ph with N. American 115V plug, CSA
8890C-72	Same as 8890A-70, except 26L/min, wired for 230V, 50Hz with cont. European(Schuko) plug, CE

Note: See page 3 for more details.